Sughrue
SUGHRUE MION, PLLC
2100 Pennsylvania Avenue, NW
Washington, DC 20037-3213
T 202.293.7060
F 202.293.7860
www.sughrue.com

March 11, 2002

**BOX PCT**
Commissioner for Patents
Washington, D.C. 20231

PCT/FR00/02475
-filed September 7, 2000

Re: Application of Ludovic PETIT
IMPROVED PUMP FOR DISPENSING FLUID PRODUCT, AND FLUID PRODUCT DISPENSING DEVICE COMPRISING SAME
**Assignee: VALOIS S.A.**
Our Ref: Q68640

Dear Sir:

The following documents and fees are submitted herewith in connection with the above application for the purpose of entering the National stage under 35 U.S.C. § 371 and in accordance with Chapter II of the Patent Cooperation Treaty:

☑ an English translation of the International Application.

☑ six (6) sheets of drawings.

☑ a Preliminary Amendment

The Declaration and Power of Attorney, Assignment, will be submitted at a later date.

It is assumed that copies of the International Application, the International Search Report, the International Preliminary Examination Report, and any Articles 19 and 34 amendments as required by § 371(c) will be supplied directly by the International Bureau, but if further copies are needed, the undersigned can easily provide them upon request.

The Government filing fee is calculated as follows:

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Total claims | 13 | - | 20 | = | | x | $18.00 | = $.00 |
| Independent claims | 1 | - | 3 | = | | x | $84.00 | = $.00 |
| Base Fee | | | | | | | | $890.00 |
| **TOTAL FEE** | | | | | | | | $890.00 |

A check for the statutory filing fee of $890.00 is attached. You are also directed and authorized to charge or credit any difference or overpayment to Deposit Account No. 19-4880. The Commissioner is hereby authorized to charge any fees under 37 C.F.R. §§ 1.16, 1.17 and 1.492 which may be required during the entire pendency of the application to Deposit Account No. 19-4880. A duplicate copy of this transmittal letter is attached.

Priority is claimed from:

| Country | Application No | Filing Date |
|---|---|---|
| France | 99/11262 | September 9, 1999 |

Since March 9, 2002 (30 months from the priority date) fell on a Saturday, the submission of these papers on Monday, March 11, 2002 is sufficient for National StageEntry.

Respectfully submitted,

Robert J. Seas, Jr.
Registration No. 21,092

RJS/amt

Sughrue
SUGHRUE MION, PLLC
2100 Pennsylvania Avenue, N.W.
Washington, DC 20037-3213
T 202.293.7060
F 202.293.7860
www.sughrue.com

March 11, 2002

**BOX PCT**
Commissioner for Patents
Washington, D.C. 20231

PCT/FR00/02475
-filed September 7, 2000

Re: Application of Ludovic PETIT
IMPROVED PUMP FOR DISPENSING FLUID PRODUCT, AND FLUID PRODUCT DISPENSING DEVICE COMPRISING SAME
**Assignee: VALOIS S.A.**
Our Ref: Q68640

Dear Sir:

The following documents and fees are submitted herewith in connection with the above application for the purpose of entering the National stage under 35 U.S.C. § 371 and in accordance with Chapter II of the Patent Cooperation Treaty:

☑ an English translation of the International Application.

☑ six (6) sheets of drawings.

☑ a Preliminary Amendment

The Declaration and Power of Attorney, Assignment, will be submitted at a later date.

It is assumed that copies of the International Application, the International Search Report, the International Preliminary Examination Report, and any Articles 19 and 34 amendments as required by § 371(c) will be supplied directly by the International Bureau, but if further copies are needed, the undersigned can easily provide them upon request.

The Government filing fee is calculated as follows:

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Total claims | 13 | - | 20 | = | | x | $18.00 | = $.00 |
| Independent claims | 1 | - | 3 | = | | x | $84.00 | = $.00 |
| Base Fee | | | | | | | | $890.00 |
| **TOTAL FEE** | | | | | | | | $890.00 |

A check for the statutory filing fee of $890.00 is attached. You are also directed and authorized to charge or credit any difference or overpayment to Deposit Account No. 19-4880. The Commissioner is hereby authorized to charge any fees under 37 C.F.R. §§ 1.16, 1.17 and 1.492 which may be required during the entire pendency of the application to Deposit Account No. 19-4880. A duplicate copy of this transmittal letter is attached.

Priority is claimed from:

| Country | Application No | Filing Date |
|---|---|---|
| France | 99/11262 | September 9, 1999 |

Since March 9, 2002 (30 months from the priority date) fell on a Saturday, the submission of these papers on Monday, March 11, 2002 is sufficient for National StageEntry.

Respectfully submitted,

Robert J. Seas, Jr.
Registration No. 21,092

RJS/amt

**PATENT APPLICATION**

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re application of

Ludovic PETIT

Appln. No.: PCT/FR00/02475

Confirmation No.: Not Yet Assigned | Group Art Unit: Not Yet Assigned

Filed: March 11, 2002 | Examiner: Not Yet Assigned

For: IMPROVED PUMP FOR DISPENSING FLUID PRODUCT, AND FLUID PRODUCT DISPENSING DEVICE COMPRISING SAME

**PRELIMINARY AMENDMENT**

Commissioner for Patents
Washington, D.C. 20231

Sir:

Prior to examination, please amend the above-identified application as follows:

**IN THE CLAIMS:**

**Please enter the following amended claims:**

3/ A pump according to claim 1, in which said annular gasket (100) forms the filtration element, said gasket (100) being permeable to air and impermeable to the fluid dispensed by said pump.

4/ A pump according to claim 1, in which the pump further includes a ferrule (60) mounted on the top edge (11) of the pump body (10) between said top edge and said annular gasket (200), said ferrule (60) extending inside said pump body (10) to co-operate with said piston (20) when said piston (20) is in the rest position, the filtration element (100) being disposed

between the top edge (11) of the pump body (10) and said ferrule (60).

7/ A pump according to claim 1, in which said intake air passageway (80) is defined between the ferrule (60) and said pup body (10) so that the ferrule (60) closes off said air passageway (80) when the pump is in the rest position, said air passageway (80) being open when said piston (20) is displaced towards its dispensing position.

8/ A pump according to claim 4, in which said ferrule (60) is provided with a radial flange (61) co-operating with the top edge (11) of the pump body (10), said flange (61) incorporating an opening (63) and/or passageway means (62), such as one or more grooves and/or ribs to define a portion of intake air passageway.

9/ A pump according to claim 7, in which said top edge (11) of the pump body (10) is provided with passageway means (12) such as one or more grooves and/or ribs to define a portion of intake air passageway.

10/ A pump according to claim 7, in which said filtration element (100) is disposed on the end wall of said top edge (11) of the pump body (10), between said passageway means (62) in said flange (60) and said passageway means (12) in said pump body (10).

11/ A pump according to claim 1, in which the pump includes a ferrule (60) mounted on the top edge (11) of the pump body (10) between said top edge and said annular gasket (200), said ferrule (60) extending inside said pump body (10) to co-operate

with said piston (20), the filtration element (100) being disposed between said ferrule (60) and said fixing ring (5).

12/ A pump according to claim 1, in which the pump body (10) incorporates a vent hole (85) forming a portion of the intake passageway (80) defined between the ferrule (60) and the pump body (10).

13/ A fluid dispenser device characterized in that it includes a dispenser pump according to claim 1.

**REMARKS**

Entry and consideration of this Amendment is respectfully requested.

Respectfully submitted,

Robert J. Seas, Jr.
Registration No. 21,092

SUGHRUE MION, PLLC
2100 Pennsylvania Avenue, N.W.
Washington, D.C. 20037-3213
Telephone: (202) 293-7060
Facsimile: (202) 293-7860
RJS/amt
Date: March 11, 2002

## APPENDIX

## VERSION WITH MARKINGS TO SHOW CHANGES MADE

**IN THE CLAIMS:**

**The claims are amended as follows:**

3/ A pump according to claim 1~~ or 2~~, in which said annular gasket (100) forms the filtration element, said gasket (100) being permeable to air and impermeable to the fluid dispensed by said pump.

4/ A pump according to claim 1~~ or 2~~, in which the pump further includes a ferrule (60) mounted on the top edge (11) of the pump body (10) between said top edge and said annular gasket (200), said ferrule (60) extending inside said pump body (10) to co-operate with said piston (20) when said piston (20) is in the rest position, the filtration element (100) being disposed between the top edge (11) of the pump body (10) and said ferrule (60).

7/ A pump according to claim~~s~~ 1~~ and 4~~, in which said intake air passageway (80) is defined between the ferrule (60) and said pup body (10) so that the ferrule (60) closes off said air passageway (80) when the pump is in the rest position, said air passageway (80) being open when said piston (20) is displaced towards its dispensing position.

8/ A pump according to ~~any one of~~ claim~~s~~ 4~~ to 7~~, in which said ferrule (60) is provided with a radial flange (61) co-operating with the top edge (11) of the pump body (10), said flange (61) incorporating an opening (63) and/or passageway means (62), such

as one or more grooves and/or ribs to define a portion of intake air passageway.

9/ A pump according to claim 7~~ or 8~~, in which said top edge (11) of the pump body (10) is provided with passageway means (12) such as one or more grooves and/or ribs to define a portion of intake air passageway.

10/ A pump according to ~~any one of~~ claim~~s~~ 7~~, 8, and 9~~, in which said filtration element (100) is disposed on the end wall of said top edge (11) of the pump body (10), between said passageway means (62) in said flange (60) and said passageway means (12) in said pump body (10).

11/ A pump according to ~~any one of~~ claim~~s~~ 1~~ to 3~~, in which the pump includes a ferrule (60) mounted on the top edge (11) of the pump body (10) between said top edge and said annular gasket (200), said ferrule (60) extending inside said pump body (10) to co-operate with said piston (20), the filtration element (100) being disposed between said ferrule (60) and said fixing ring (5).

12/ A pump according to ~~any preceding~~ claim 1, in which the pump body (10) incorporates a vent hole (85) forming a portion of the intake passageway (80) defined between the ferrule (60) and the pump body (10).

13/ A fluid dispenser device characterized in that it includes a dispenser pump according to ~~any one of~~ claim~~s~~ 1~~ to 12~~.

6/prts



# AN IMPROVED FLUID DISPENSER PUMP, AND A FLUID DISPENSER DEVICE INCLUDING SUCH A PUMP

The present invention relates to an improved fluid dispenser pump, and to a fluid dispenser device including such a pump. More particularly, the present invention relates to a fluid dispenser pump incorporating filtration and/or treatment means for filtering and/or treating intake air.

In numerous uses, in particular for pharmaceutical uses, it is desirable to avoid incorporating preservatives in the fluid to be dispensed. To achieve that, there are two possible solutions. The first solution consists in using an airless system, i.e. a system which does not draw in any air. In which case, a fluid reservoir is provided whose volume decreases each time fluid is dispensed so as to compensate for the suction generated by a determined quantity of fluid being expelled. For example, this may be achieved by means of a flexible pouch that is emptied progressively, or by means of a follower piston disposed in the reservoir. The second solution is to treat or to filter the air drawn in each time fluid is dispensed. For this purpose, filtration elements are advantageously disposed in the intake air passageway in the dispenser pump or in the dispenser device. Thus, Document EP-0 189 549 discloses disposing a filter against the vertical side wall of the pump body that incorporates a vent hole. Document EP-0 800 869 discloses disposing a filter on the top edge of the neck of the receptacle. Document WO 97/18902 discloses disposing a filter inside the pump body between the piston and said pump body.

The systems described above suffer from the major drawback of being complicated to implement. It is necessary to modify at least one component part of the pump or of the dispenser device incorporating said pump, and assembly is therefore made more complex. The manufacturing and assembly cost is thus increased.

An object of the present invention is to provide a fluid dispenser pump and a fluid dispenser device including such a pump that do not reproduce the above-mentioned drawbacks.

An object of the present invention is to provide such a fluid dispenser pump and such a fluid dispenser device including such a pump that make it possible to filter and/or to treat the intake air simply and reliably without having to modify any component part of the fluid dispenser pump or of the fluid dispenser device.

Another object of the present invention is to provide such a fluid dispenser pump and such a fluid dispenser device incorporating such a pump in which the system for filtering the intake air is simpler and less costly to implement, in particular industrially.

The present invention thus provides a fluid dispenser pump including a pump body, a piston being slidably received in leaktight manner in said pump body to slide between a rest position and a dispensing position, the top edge of the pump body being fixed in a fixing ring serving to assemble said pump to a reservoir, an annular sealing gasket being disposed between said pump body and said fixing ring, said pump further being provided with a intake air passageway between the reservoir and the atmosphere, said pump being characterized in that a filtration and/or treatment element for filtering and/or treating the intake air is provided in said intake air passageway, said filtration element being disposed between said top edge of the pump body and said fixing ring.

In a first variant embodiment, said intake air passageway is open when the pump is in all of its positions.

Preferably, said annular gasket forms the filtration element, said gasket being permeable to air and impermeable to the fluid dispensed by said pump.

In another embodiment, the pump further includes a ferrule mounted on the top edge of the pump body between said top edge and said annular gasket, said ferrule extending inside said pump body to co-operate with said piston when said piston is in the rest position, the filtration element being disposed between the top edge of the pump body and said ferrule.

Advantageously, the top edge of the pump body is provided with a through bore defining a portion of the intake air passageway, said filtration element being disposed between said top edge of the pump body and said ferrule, while covering over said through bore completely.

Advantageously, said filtration element is provided with passageway means for defining a portion of air passageway between the ferrule and the annular gasket.

In a second variant embodiment, said intake air passageway is defined between the ferrule and said pump body so that the ferrule closes off said air passageway when the pump is in the rest position, said air passageway being open when said piston is displaced towards its dispensing position.

Advantageously, said ferrule is provided with a radial flange co-operating with the top edge of the pump body, said flange incorporating an opening and/or passageway means, such as one or more grooves and/or ribs to define a portion of intake air passageway.

Advantageously, said top edge of the pump body is provided with passageway means such as one or more grooves and/or ribs to define a portion of intake air passageway.

Advantageously, said filtration element is disposed on the end wall of said top edge of the pump body, between said passageway means in said flange and said passageway means in said pump body.

In an advantageous variant embodiment, the pump includes a ferrule mounted on the top edge of the pump

body between said top edge and said annular gasket, said ferrule extending inside said pump body to co-operate with said piston when said piston is in the rest position, the filtration element being disposed between said ferrule and said fixing ring.

Advantageously, the pump body incorporates a vent hole forming a portion of the intake passageway defined between the ferrule and the pump body.

The present invention also provides a fluid dispenser device including such a dispenser pump as defined above.

The advantages and characteristics of the present invention will appear more clearly on reading the following detailed description of embodiments of the invention given by way of non-limiting example and with reference to the accompanying drawings, in which:

Figure 1 is a diagrammatic section view of a fluid dispenser pump in a first variant embodiment of the present invention;

Figure 2 is an enlarged diagrammatic view of a detail of Figure 1;

Figure 3 is a diagrammatic view similar to Figure 1, showing a second variant embodiment of the invention;

Figure 4 is an enlarged diagrammatic view of a detail of Figure 3;

Figure 5 is a diagrammatic section view of a dispenser device including a pump in a preferred embodiment of the invention;

Figure 6 is a diagrammatic view similar to Figures 1 and 3, showing a variant embodiment of the invention;

Figure 7 is an enlarged diagrammatic view of a detail of Figure 6;

Figure 8 is a diagrammatic view of another variant embodiment of the invention; and

Figure 9 is a diagrammatic view of yet another embodiment of the invention.

With reference to the figures, the fluid dispenser pump includes a pump body 10 slidably receiving a piston 20 in leaktight manner. The piston is advantageously connected to an actuating rod 21. The pump body 10 is generally assembled to the neck of a reservoir 1 by means of a fixing ring 5, which may be of any type, and in particular snap-fastenable, screw-on, or crimp-on. The sealing between the pump and the fixing ring 5 is provided by means of an annular gasket 100, 200, and the sealing between the fixing ring 5 and the reservoir 1 is provided by means of a neck gasket 300.

Inside the pump body 10, a pump chamber 30 is defined between an inlet valve 40, 41 and an outlet valve 50, 51, so that the pump shown in the figures is a pre-compression pump. When the user actuates a dispensing head (not shown), said dispensing head co-operates with the actuating rod 21 to displace the piston 20 in leaktight manner inside the pump body 10. This displacement causes the inlet valve 40 to close, so that the volume of fluid is defined inside the pump chamber 30. Then, the outlet valve 50 is caused to open by the pressure generated inside the pump chamber 30, so that said metered quantity of fluid is expelled through the expulsion channel 6.

To avoid generating suction inside the reservoir, the pump of the invention is provided with a intake air passageway 80 connecting the inside of the reservoir to the atmosphere. In a first variant embodiment shown in Figures 3 to 5, the intake air passageway 80 is open when the pump is in all of its positions. It advantageously extends between the top edge 11 of the pump body 10 and the fixing ring 5.

In a preferred embodiment of the invention, shown in Figures 5, 6, 7, and 9, the annular gasket 100 forms a filtration and/or treatment element for filtering and/or treating the intake air. In which case, it is impermeable to the fluid contained in the reservoir, but

permeable to air, while having a filtering action on the incoming air. This makes it possible to omit one part, namely the filter, thereby simplifying manufacture and assembly and reducing cost.

In another advantageous embodiment shown in Figures 3 and 4, the filtration element 100 is distinct from the gasket 200, and is disposed between the top edge 11 of the pump body 10, and a ferrule 60. The ferrule 60 is itself disposed between the top edge 11 of the pump body 10 and the fixing ring 5, with the sealing gasket 200 being interposed. The ferrule 60 extends inside the pump body 10 to co-operate with the piston 20 and to define the rest position therefor. Advantageously, the ferrule 60 is provided with a radial flange 61 which rests on the end wall of the top edge 11 of the pump body, with the filtration element being interposed.

Advantageously, the air passageway 80 may be defined by a through bore 70 provided in the top edge 11 of the pump body 10. The filtration element 100 is then preferably disposed between said top edge 11 of the pump body 10 and said ferrule 60, while completely covering over said bore 70. Optionally, said filtration element 100 may be provided with passageway means for defining an air passageway portion between the ferrule 60 and the annular gasket 200 providing the sealing between the pump and the fixing ring 5. In a variant, it is the ferrule 60 that can incorporate passageway means for defining an air passageway portion. In which case, the passageway means may comprise an opening 63 provided in the radial flange 61 of the ferrule 60. In addition, ribs and/or grooves 62 may be provided in the radial flange, on that one of its sides which is in contact with the gasket 200.

In a second variant embodiment shown in Figures 1 and 2, the intake air passageway 80 is not open when the pump is in all of its positions. When the pump is in the rest position, as shown in Figure 1, said ferrule defines the rest position of the piston by forming an abutment

against which the piston 20 is displaced axially, and said ferrule 60 also co-operates in leaktight manner with said piston to close off said intake air passageway 80. This intake air passageway extends firstly between the actuating rod 21 and the top end of the ferrule 60. It goes down the inside wall of the ferrule 60 to the bottom end thereof, where it is closed off by the piston 20 when said piston is in the rest position. When the piston 20 is displaced towards its dispensing position when the pump is actuated, the intake air passageway 80 is open at that place and it is extended between the pump body 10 and the outside of the ferrule 60 to the level of the top edge 11 of the pump body 10. Then, it goes between the outside of the pump body 10 and the fixing ring 5, and it penetrates into the reservoir (not shown in Figure 1).

In this variant, the filtration and/or treatment element for filtering and treating the intake air 100 is also disposed between the top edge 11 of the pump body 10 and said ferrule 60. In Figure 2, the arrows diagrammatically show the flow of intake air at that place. Preferably, the filtration element 100 is permeable to air, but impermeable to the fluid contained in the reservoir and/or in the pump.

The radial flange 61 of the ferrule 60 is preferably provided with passageway means 62 such as one or more grooves and/or ribs to define a intake air passageway. Similarly, the top edge 11 of the pump body 10 may also be provided with passageway means 12, such as one or more grooves and/or ribs to define an air passageway. Thus, in the example shown in Figure 2, the filtration element 100 is interposed between said passageway means 12 in the pump body 10 and said passageway means 62 in the ferrule 60.

The filtration element 100, which may be made in the form of a radial annular element, is very easy to make and simple to assembly, without requiring any major modification of any component part of the pump. In the

particular example shown in Figures 1 to 4, the filtration ring 100 is merely laid on the top edge 11 of the pump body before the ferrule 60 is put in place. The passageway means 62, 12, or 102 respectively in the ferrule 60, in the pump body 10, and in the filtration element are very simple and inexpensive to make, and it is clear that any suitable passageway means may be considered without going beyond the ambit of the present invention.

Figures 6 to 9 show various variant embodiments in which the intake passageway 80 extends firstly between the ferrule 60 and the fixing ring 5 and then between the ferrule 60 and the pump body 10. The pump body 10 is then provided with a vent hole 85 opening out in the reservoir. This embodiment makes it possible to make the neck gasket 300 completely leaktight on the pump body 10, and thus to prevent any risk of the fluid coming into contact with the intake passageway 80, the vent hole 85 being closed off by the piston 20 when the pump is in the rest position. Optionally, the neck gasket 300 may be provided with a valve 310 (shown in Figure 9) to isolate the vent hole 85. In the variants of Figures 6 to 9, the ferrule 60 co-operates in leaktight manner with the actuating rod 21, e.g. by means of a sealing lip 65 provided on the inside surface of the ferrule 60.

In the embodiment of Figures 6, 7, and 9, the gasket 100 forms the filter in a manner similar to the embodiment of Figure 5. In these variants, it is disposed between the radial flange 61 of the ferrule 60 and the fixing ring 5.

In the example of Figure 8, the filter 100 is disposed on the gasket 200, these two elements being provided between the radial flange 61 of the ferrule 60 and the fixing ring 5. In particular, the filter 100 is disposed between the gasket 200 and the fixing ring.

The filtration element may be made of any suitable material adapted to filtering and/or to treating the

intake air that penetrates into the reservoir and that is to come into contact with the fluid.

Although it is shown with reference to particular types of pump, the present invention is naturally applicable to any type of pump for dispensing a fluid. Other modifications may also be considered without going beyond the ambit of the present invention, the scope of which is defined by the accompanying claims.

CLAIMS

1/ A fluid dispenser pump including a pump body (10), a piston (20) being slidably received in leaktight manner in said pump body (10) to slide between a rest position and a dispensing position, the top edge (11) of the pump body (10) being fixed in a fixing ring (5) serving to assemble said pump to a reservoir (1), an annular sealing gasket (100, 200) being disposed between said pump body (10) and said fixing ring (5), said pump further being provided with a intake air passageway (80) between the reservoir (1) and the atmosphere, said pump being characterized in that a filtration and/or treatment element (100) for filtering and/or treating the intake air is provided in said intake air passageway (80), said filtration element (100) being disposed between said top edge (11) of the pump body and said fixing ring (5).

2/ A pump according to claim 1, in which said intake air passageway (80) is open when the pump (20) is in all of its positions.

3/ A pump according to claim 1 or 2, in which said annular gasket (100) forms the filtration element, said gasket (100) being permeable to air and impermeable to the fluid dispensed by said pump.

4/ A pump according to claim 1 or 2, in which the pump further includes a ferrule (60) mounted on the top edge (11) of the pump body (10) between said top edge and said annular gasket (200), said ferrule (60) extending inside said pump body (10) to co-operate with said piston (20) when said piston (20) is in the rest position, the filtration element (100) being disposed between the top edge (11) of the pump body (10) and said ferrule (60).

5/ A pump according to claim 4, in which the top edge (11) of the pump body (10) is provided with a through

bore (70) defining a portion of the intake air passageway (80), said filtration element (100) being disposed between said top edge (11) of the pump body (10) and said ferrule (60), while covering over said through bore (70) completely.

6/ A pump according to claim 5, in which said filtration element (100) is provided with passageway means for defining a portion of air passageway between the ferrule (60) and the annular gasket (200).

7/ A pump according to claims 1 and 4, in which said intake air passageway (80) is defined between the ferrule (60) and said pup body (10) so that the ferrule (60) closes off said air passageway (80) when the pump is in the rest position, said air passageway (80) being open when said piston (20) is displaced towards its dispensing position.

8/ A pump according to any one of claims 4 to 7, in which said ferrule (60) is provided with a radial flange (61) co-operating with the top edge (11) of the pump body (10), said flange (61) incorporating an opening (63) and/or passageway means (62), such as one or more grooves and/or ribs to define a portion of intake air passageway.

9/ A pump according to claim 7 or 8, in which said top edge (11) of the pump body (10) is provided with passageway means (12) such as one or more grooves and/or ribs to define a portion of intake air passageway.

10/ A pump according to any one of claims 7, 8, and 9, in which said filtration element (100) is disposed on the end wall of said top edge (11) of the pump body (10), between said passageway means (62) in said flange (60) and said passageway means (12) in said pump body (10).

11/ A pump according to any one of claims 1 to 3, in which the pump includes a ferrule (60) mounted on the top edge (11) of the pump body (10) between said top edge and said annular gasket (200), said ferrule (60) extending inside said pump body (10) to co-operate with said piston (20), the filtration element (100) being disposed between said ferrule (60) and said fixing ring (5).

12/ A pump according to any preceding claim, in which the pump body (10) incorporates a vent hole (85) forming a portion of the intake passageway (80) defined between the ferrule (60) and the pump body (10).

13/ A fluid dispenser device characterized in that it includes a dispenser pump according to any one of claims 1 to 12.

# A B S T R A C T

AN IMPROVED FLUID DISPENSER PUMP, AND A FLUID DISPENSER DEVICE INCLUDING SUCH A PUMP

A fluid dispenser pump including a pump body (10), a piston (20) being slidably received in leaktight manner in said pump body (10) to slide between a rest position and a dispensing position, the top edge (11) of the pump body (10) being fixed in a fixing ring (5) serving to assemble said pump to a reservoir (1), an annular sealing gasket (100, 200) being disposed between said pump body (10) and said fixing ring (5), said pump further being provided with a intake air passageway (80) between the reservoir (1) and the atmosphere, said pump being characterized in that a filtration and/or treatment element (100) for filtering and/or treating the intake air is provided in said intake air passageway (80), said filtration element (100) being disposed between said top edge (11) of the pump body and said fixing ring (5).

Translation of the title and the abstract as they were when originally filed by the Applicant. No account has been taken of any changes that may have been made subsequently by the PCT Authorities acting ex officio, e.g. under PCT Rules 37.2, 38.2, and/or 48.3.

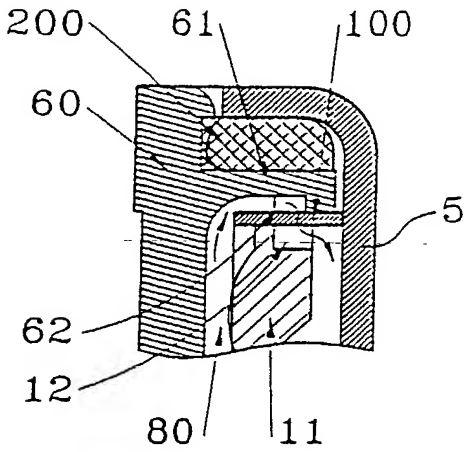
200
61
100
60
5
62
12
80
11

FIG.2

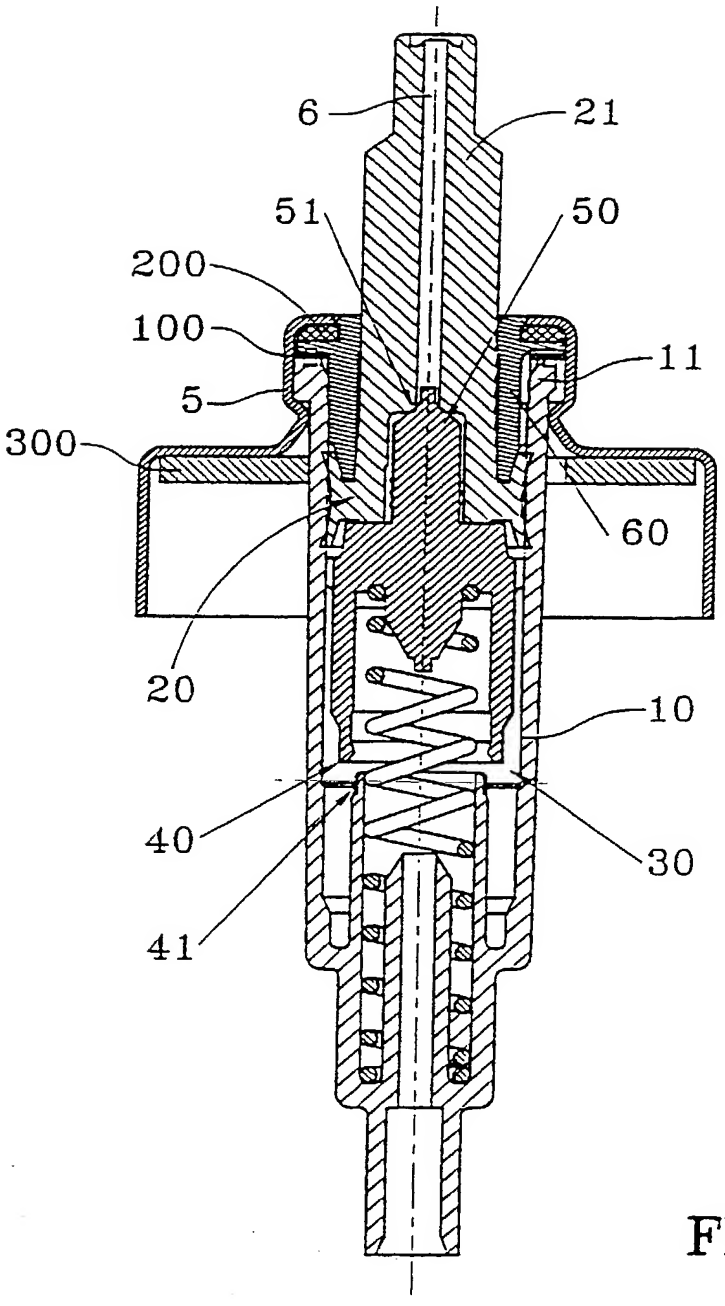
6
21
51
50
200
100
11
5
300
60
20
10
40
30
41

FIG.1

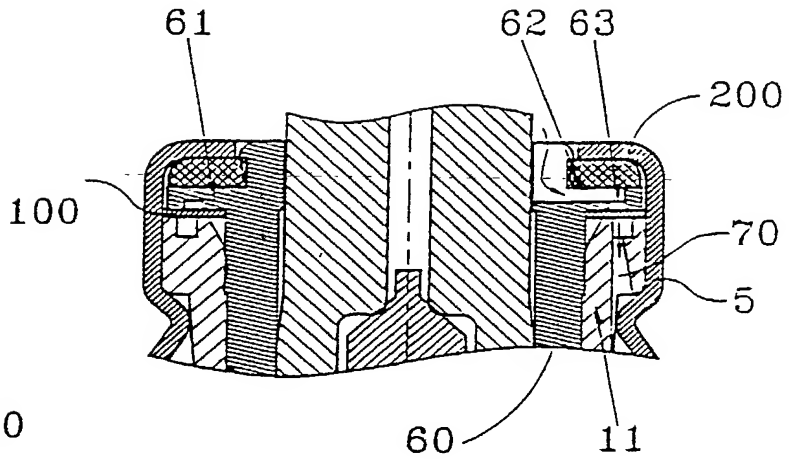


FIG.4

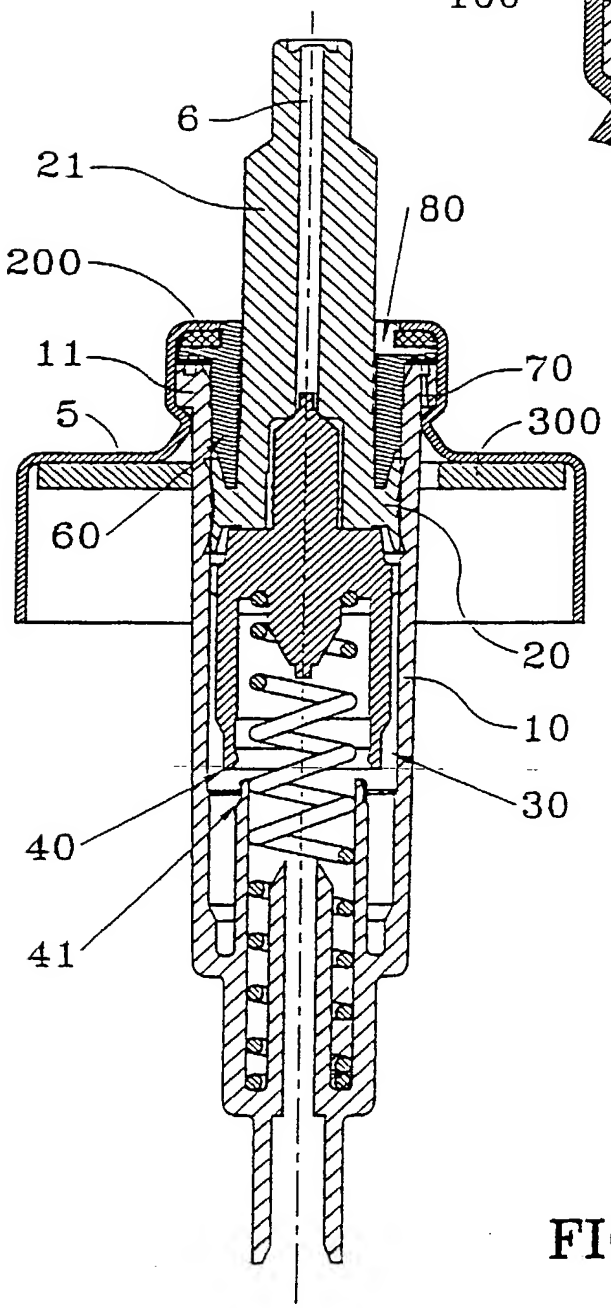


FIG.3

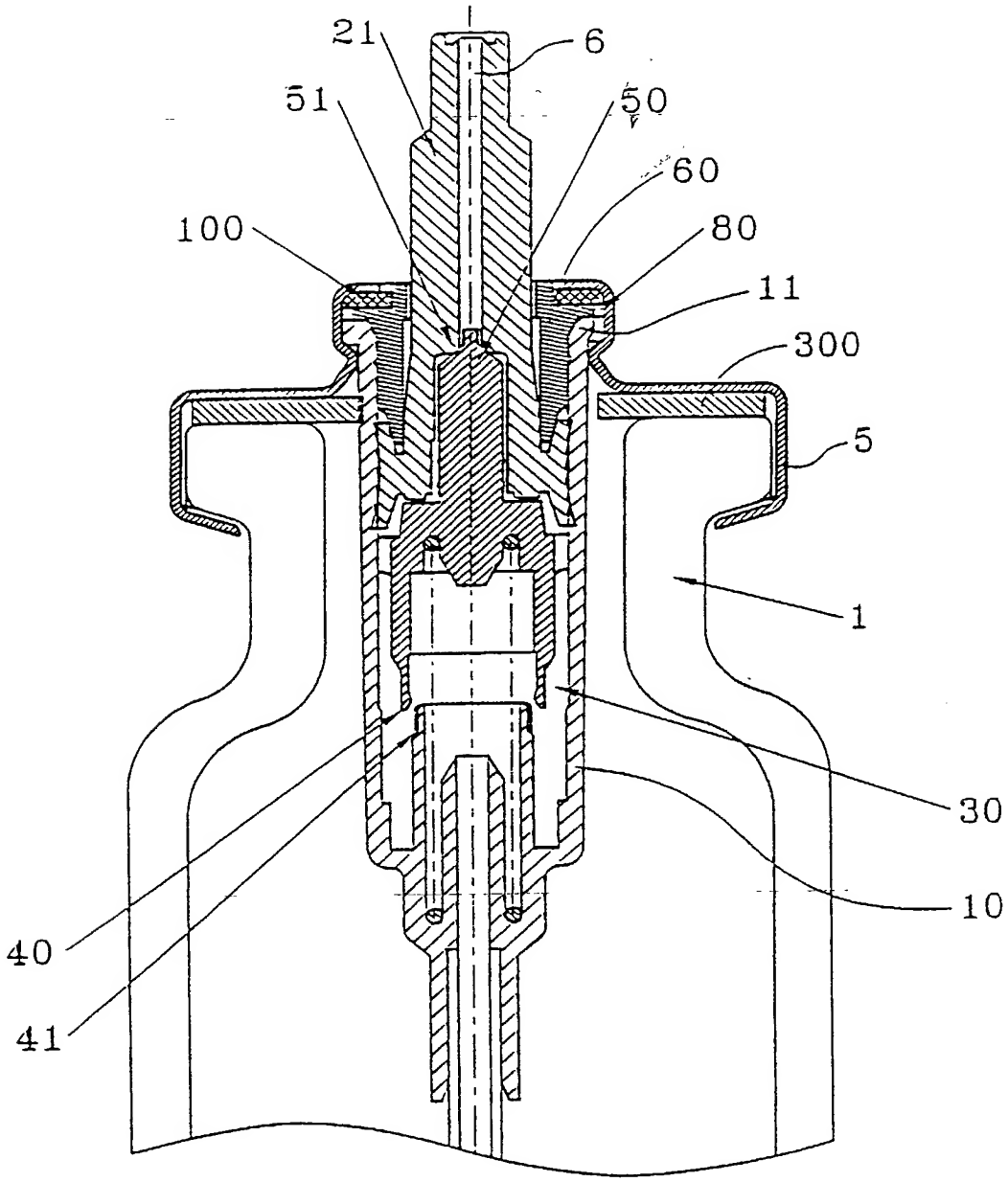


FIG.5

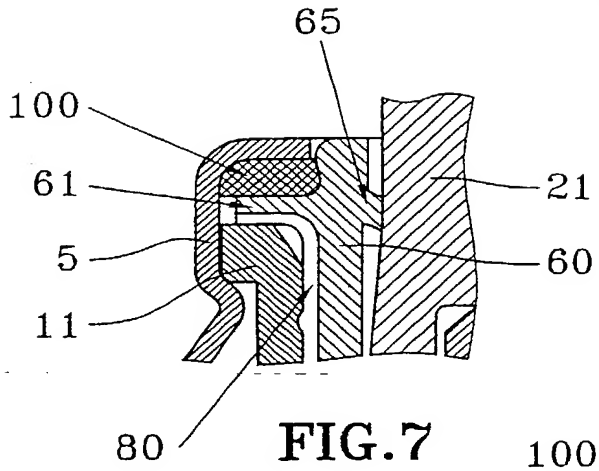


FIG.7

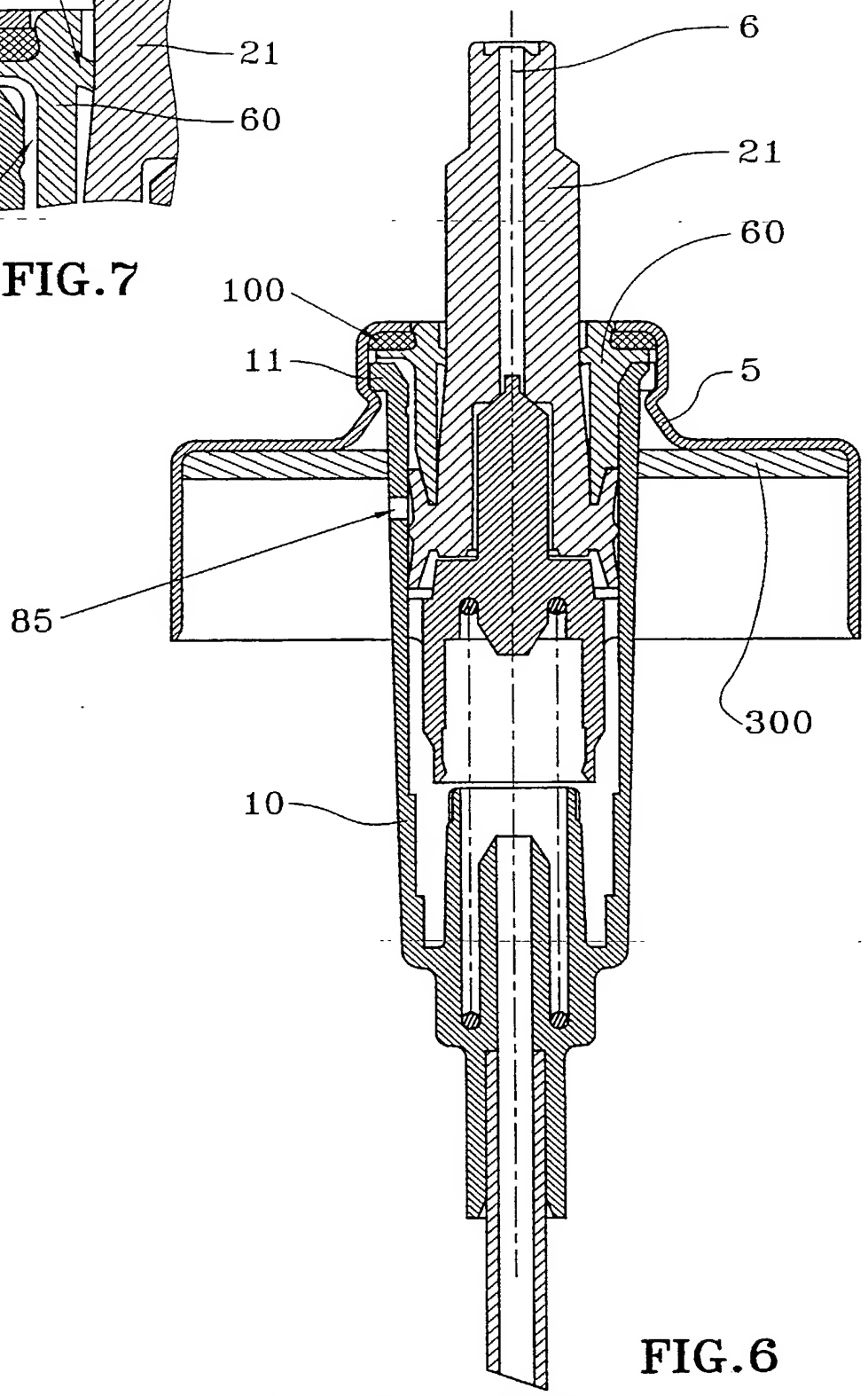


FIG.6

5/6

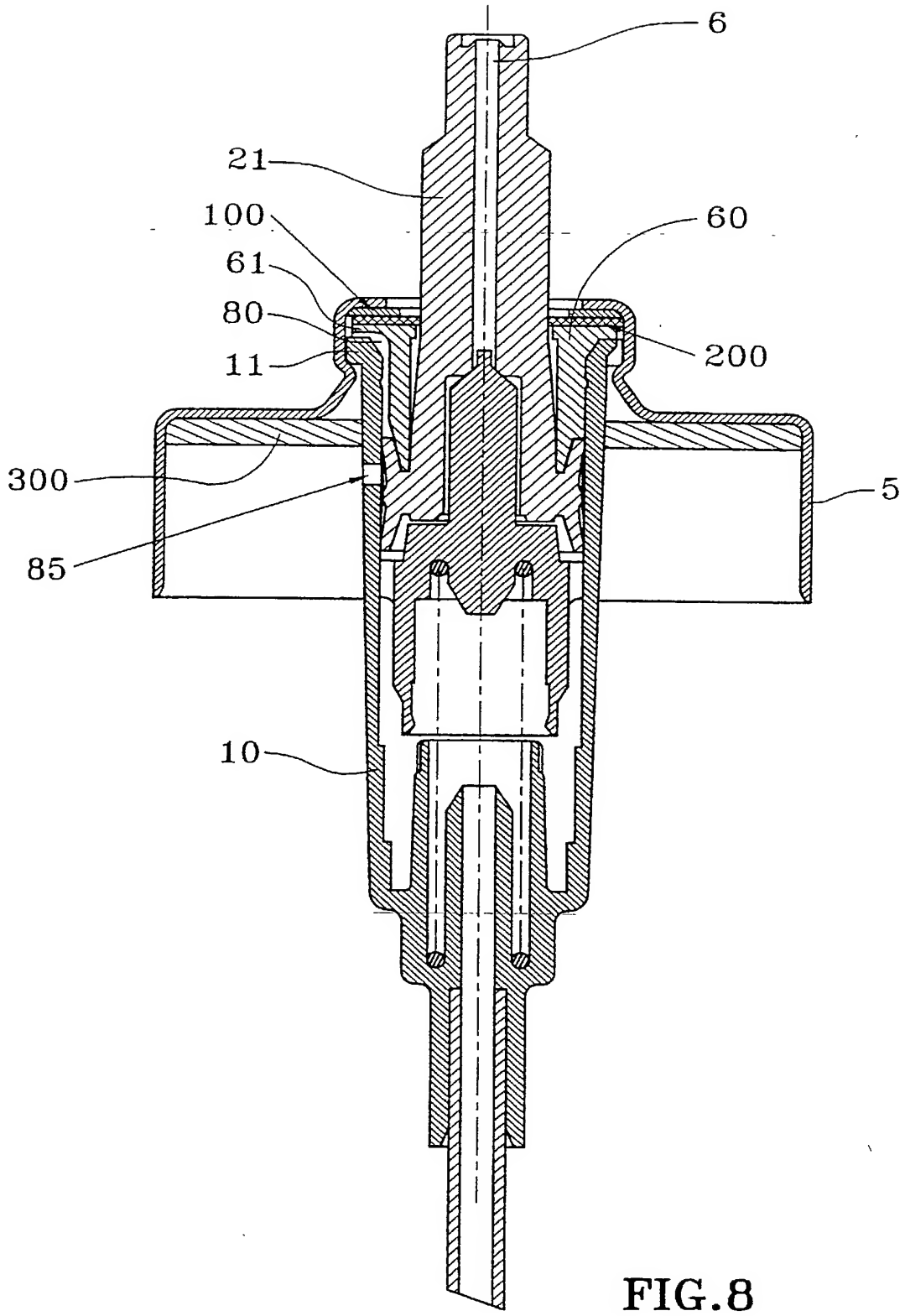


FIG.8

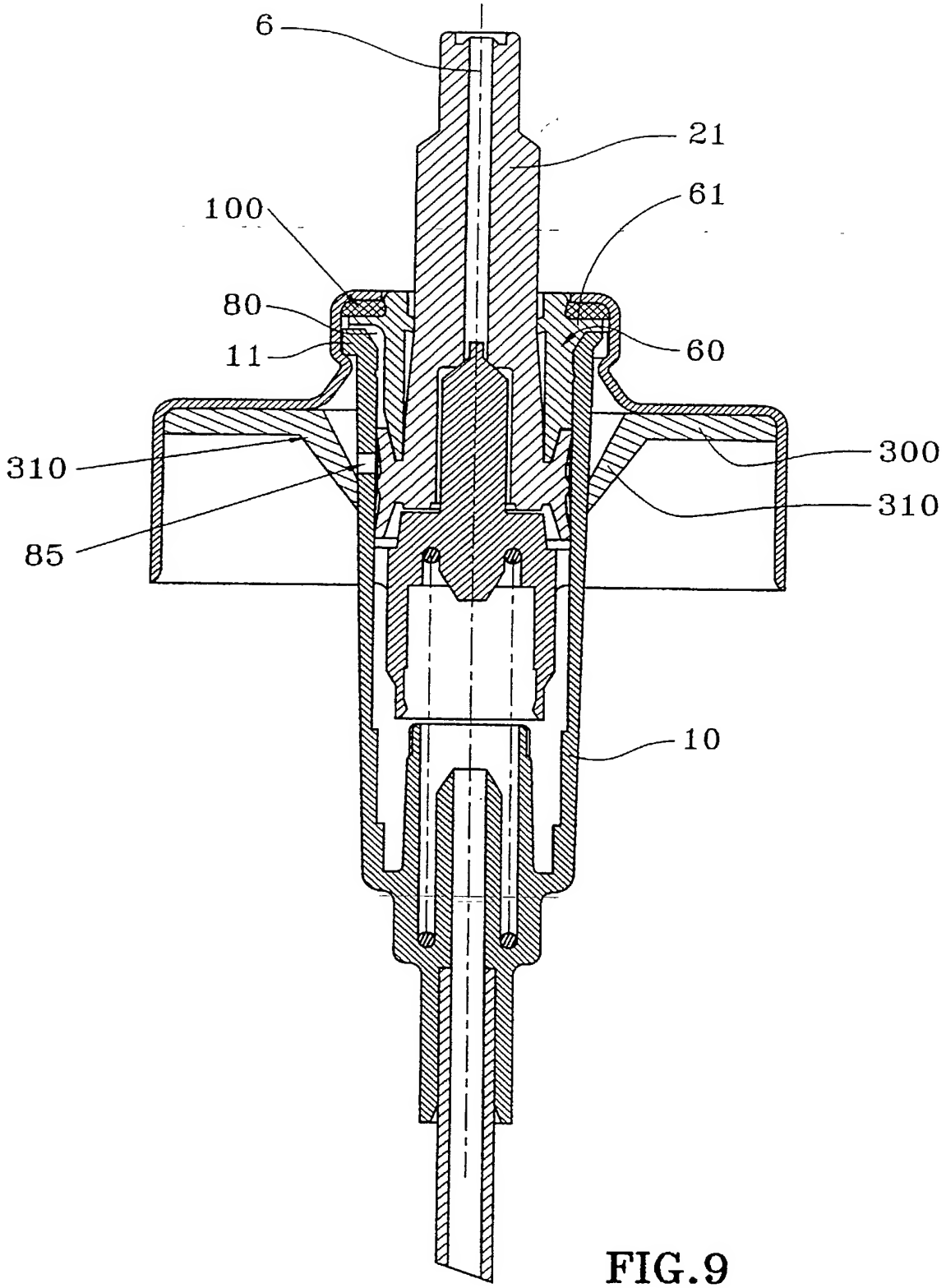


FIG.9

# Declaration and Power of Attorney for Patent Application

# Déclaration et pouvoirs pour demande de brevet

## French Language Declaration

En tant que l'inventeur nommé ci-après, je déclare par le présent acte que :

Mon domicile, mon adresse postale et ma nationalité sont ceux figurant ci-dessous à côté de mon nom.

Je crois être le premier inventeur original et unique (si un seul nom est mentionné ci-dessous), ou l'un des premiers co-inventeurs originaux (si plusieurs noms sont mentionnés ci-dessous) de l'objet revendiqué, pour lequel une demande de brevet a été déposée concernant l'invention intitulée

_____

_____

_____

_____

_____

et dont la description est fournie ci-joint à moins que la case suivante n'ait été cochée :

☐ a été déposée le _____
sous le numéro de demande des Etats-Unis ou le numéro de demande international PCT
_____ (n° de confirmation _____)
et modifiée le
_____ (le cas échéant).

Je déclare par le présent acte avoir passé en revue et compris le contenu de la description ci-dessus, revendications comprises, telles que modifiées par toute modification dont il aura été fait référence ci-dessus.

Je reconnais devoir divulguer toute information pertinente à la brevetabilité, comme défini dans le Titre 37, § 1.56 du Code fédéral des réglementations.

As a below named inventor, I hereby declare that:

My residence, mailing address and citizenship are as stated next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

AN IMPROVED FLUID DISPENSER PUMP, AND A
FLUID DISPENSER DEVICE INCLUDING SUCH A POMP.

the specification of which is attached hereto unless the following box is checked:

☒ was filed on **September 7, 2000**
as United States Application Number or PCT International Application Number
**PCT/FR00/02475** (Conf. No._____)
and was amended on
_____(if applicable).

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, § 1.56.

## French Language Declaration

Je revendique par le présent acte avoir la priorité étrangère, en vertu du Titre 35, § 119(a)-(d) ou § 365(b) du Code des Etats-Unis, sur toute demande étrangère de brevet ou certificat d'inventeur ou, en vertu du Titre 35, § 365(a) du même Code, sur toute demande internationale PCT désignant au moins un pays autre que les Etats-Unis et figurant ci-dessous et, en cochant la case, j'ai aussi indiqué ci-dessous toute demande étrangère de brevet, tout certificat d'inventeur ou toute demande internationale PCT ayant une date de dépôt précédant celle de la demande à propos de laquelle une priorité est revendiquée.

I hereby claim foreign priority under Title 35, United States Code, § 119(a)-(d) or § 365(b) of any foreign application(s) for patent or inventor's certificate, or § 365(a) of any PCT International application which designated at least one country other than the United States, listed below, and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or PCT International application having a filing date before that of the application on which priority is claimed.

| Prior foreign application(s)<br>Demande(s) de brevet antérieure(s) | | | Priority Claimed<br>Droit de priorité revendiqué<br>Yes/Oui | No/Non |
|---|---|---|---|---|
| **99.11262**<br>(Number)<br>(Numéro) | **FR**<br>(Country)<br>(Pays) | **September 9, 1999**<br>(Day/Month/Year Filed)<br>(Jour/Mois/Année de dépôt) | ☒ | ☐ |
| (Number)<br>(Numéro) | (Country)<br>(Pays) | (Day/Month/Year Filed)<br>(Jour/Mois/Année de dépôt) | ☐ | ☐ |

Je revendique par le présent acte tout bénéfice, en vertu du Titre 35, § 119(e) du Code des Etats-Unis, de toute demande de brevet provisoire effectuée aux Etats-Unis et figurant ci-dessous.

I hereby claim the benefit under Title 35, United States Code, § 119(e) of any United States provisional application(s) listed below.

| (Application No.)<br>(N° de demande) | (Filing Date)<br>(Date de dépôt) |
|---|---|
| (Application No.)<br>(N° de demande) | (Filing Date)<br>(Date de dépôt) |

Je revendique par le présent acte tout bénéfice, en vertu du Titre 35, § 120 du Code des Etats-Unis, de toute demande de brevet effectuée aux Etats-Unis, ou en vertu du Titre 35, § 365(c) du même Code, de toute demande internationale PCT désignant les Etats-Unis et figurant ci-dessous et, dans la mesure où l'objet de chacune des revendications de cette demande de brevet n'est pas divulgué dans la demande antérieure américaine ou internationale PCT, en vertu des dispositions du premier paragraphe du Titre 35, § 112 du Code des Etats-Unis, je reconnais devoir divulguer toute information pertinente à la brevetabilité, comme défini dans le Titre 37, § 1.56 du Code fédéral des réglementations, dont j'ai pu disposer entre la date de dépôt de la demande antérieure et la date de dépôt de la demande nationale ou internationale PCT de la présente demande :

I hereby claim the benefit under Title 35, United States Code, § 120 of any United States application(s), or § 365(c) of any PCT International application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of Title 35, United States Code, § 112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, § 1.56 which became available between the filing date of the prior application and the national or PCT International filing date of this application.

| (Application No.)<br>(N° de demande) | (Filing Date)<br>(Date de dépôt) | (Status: patented, pending, abandoned)<br>(Statut : breveté, en cours d'examen, abandonné) |
|---|---|---|
| (Application No.)<br>(N° de demande) | (Filing Date)<br>(Date de dépôt) | (Status: patented, pending, abandoned)<br>(Statut : breveté, en cours d'examen, abandonné) |

Je déclare par le présent acte que toute déclaration ci-incluse est, à ma connaissance, véridique et que toute déclaration formulée à partir de renseignements ou de suppositions est tenue pour véridique; et de plus, que toutes ces déclarations ont été formulées en sachant que toute fausse déclaration volontaire ou son équivalent est passible d'une amende ou d'une incarcération, ou des deux, en vertu de la Section 1001 du Titre 18 du Code des Etats-Unis, et que de telles déclarations volontairement fausses risquent de compromettre la validité de la demande de brevet ou du brevet délivré à partir de celle-ci.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

## French Language Declaration

POUVOIRS : je désigne par les présentes tous avocats de SUGHRUE MION, PLLC énumérés sous le Numéro de Client USPTO figurant ci-après comme mes avocats pour poursuivre la présente procédure et traiter avec l'Office des brevets et des marques (*Patent and Trademark Office*) toute affaire en liaison avec celle-ci, reconnaissant formellement que les avocats spécifiques énumérés sous ce Numéro de Client peuvent être modifiés à tout moment, à la discrétion exclusive de Sughrue Mion, PLLC, et demande que toute correspondance relative à la demande soit adressée à l'adresse mentionnée sous le même Numéro USPTO.

POWER OF ATTORNEY: I hereby appoint all attorneys of SUGHRUE MION, PLLC who are listed under the USPTO Customer Number shown below as my attorneys to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith, recognizing that the specific attorneys listed under that Customer Number may be changed from time to time at the sole discretion of Sughrue Mion, PLLC, and request that all correspondence about the application be addressed to the address filed under the same USPTO Customer Number.

*23373*
~~23373~~
PATENT TRADEMARK OFFICE

Adresser tout appel téléphonique à : *(nom et numéro de téléphone)*

SUGHRUE MION, PLLC
+1 (202) 293-7060

Direct Telephone Calls to: (name and telephone number)

SUGHRUE MION, PLLC
+1 (202) 293-7060

| | |
|---|---|
| **Nom complet de l'unique ou premier inventeur**<br>Ludovic PETIT | **Full name of sole or first inventor** |
| Signature de l'inventeur Date 24/07/02 | Inventor's signature Date |
| Domicile 4, rue du Buc<br>27110 VITOT / FRANCE FRX | Residence |
| Nationalité<br>FRANCAISE | Citizenship |
| Adresse postale<br>Same as domicile | Mailing Address |
| **Nom complet du deuxième co-inventeur, le cas échéant** | **Full name of second joint inventor, if any** |
| Signature du deuxième inventeur Date | Second inventor's signature Date |
| Domicile | Residence |
| Nationalité | Citizenship |
| Adresse postale | Mailing Address |